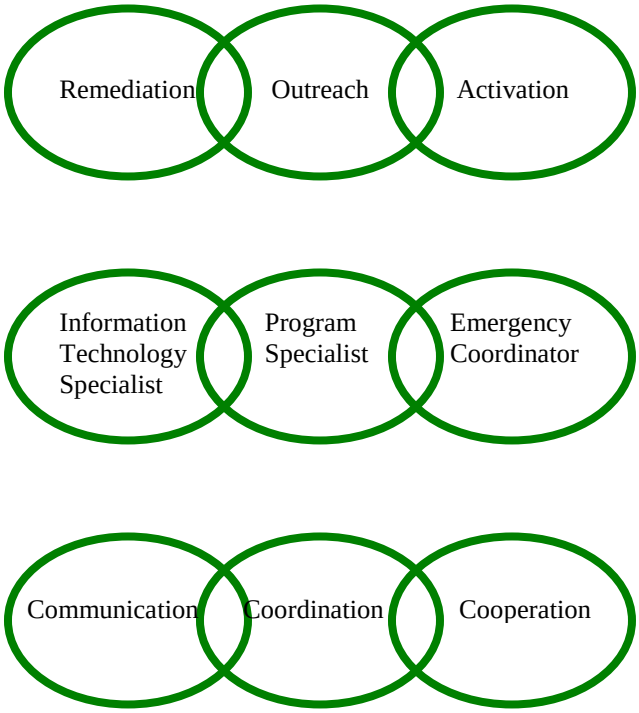
OFFICE OF EMERGENCY TRANSPORTATION

U.S. Department of Transportation

Putting the Lessons Learned from Y2K to Work



U.S. Department of Transportation
Research and Special Programs Administration

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Executive Summary

Communication, Coordination and Cooperation

When the clocks rolled over to January 1, 2000, the U.S. Department of Transportation (DOT) was extremely successful in meeting the Year 2000. However, in reality the effort was one that in many ways started slowly and then grew exponentially. While a challenge of this magnitude is not anticipated any time soon, it is likely that the time the Department will have to prepare for the unexpected will be far shorter. Both the Department and the public will be far better served if the successful lessons learned from Y2K can become the basis of how the DOT does business in the future. The challenge the department faced for Y2K and will face again in the future is to ensure that we can manage major multi staged, multi agency efforts which will involve our partners, require the ability to use and manage ever-changing technology and demand both good internal communications as well as those with our partners.

The DOT's Y2K effort was a multi-year effort whose three stages ran simultaneously. The three words that were selected - one for each stage of the effort - try to capture what is the necessary outcome for the stage to be considered a success.

Communication was chosen for remediation because the result of a successful remediation effort is the ability of information technology systems to communicate with each other. When these systems can communicate, accurate information flows occur and transportation systems will work.

Coordination was selected to describe the outreach effort because the result of a well-coordinated effort is one that involves the efforts of many partners. As a OneDOT effort, each mode strength was emphasized. For example, the FAA and the Coast Guard took the lead in international concerns and the ITS office (the Office of Traffic Management and ITS Applications) of FHWA took the lead in organizing the 1998 Summit. In the instance of Y2K, the partners were the many DOT agencies working together and the 129 or so associations representing the broad range of transportation groups. The U.S. DOT effort strengthened existing partnerships and revitalized dormant ones.

Cooperation was chosen to describe activation. During an emergency and the subsequent response, cooperation is essential. Emergencies require staff and agencies to be tested beyond their standard day-to-day efforts. The preparation prior and during the Y2K rollover showed cooperation at its best.

Two keys led to the success. One was the full and constant attention by senior management to Y2K from the beginning to the end. The second success was how the Department's personnel was used. With the emphasis on teamwork, the three stages were somewhat coordinated. The staff assigned to Y2K represented a range of the Department's expertise. From these cross-functional teams came a new understanding and deeper appreciation of the roles and responsibilities of others.

Introduction

"The continued smooth operation of our transportation systems is due in large part to the comprehensive efforts made by the Department of Transportation and its public and private sector partners to prepare for the Year 2000. Led by President Clinton, Vice President Gore and John Koskinen, government and industry, working together, have produced a safe transition to the new year with transportation systems that continue to operate normally." U.S. Transportation Secretary Rodney Slater, January 3, 2000.

"Preparation equals Performance."
Admiral James M. Loy, Commandant, U.S. Coast Guard

Mr. John Koskinen, Chair of the President Council on Year 2000 Conversion, noted in a December 14, 1999 speech before the National Press Club that, "It not a stretch to say that Y2K is the greatest management challenge the world has faced in the last 50 years.... But when you consider the scope of the work - identifying, fixing, and testing millions of systems and data exchanges in what has become a truly global economy - the magnitude of the problem becomes clearer. It's easy to understand why serious people two years ago maintained there was no way we could finish the work in time." In addition, in a March 2000 ceremony honoring the U.S. Department of Transportation (DOT), Mr. Koskinen praised the Department as one of the leading federal departments that met the challenge.

While the Department was extremely successful in meeting the Y2K challenge, in reality the effort was one that in many ways started slowly and then grew exponentially. While a challenge of this magnitude is not anticipated any time soon, it is likely that the time the Department will have to prepare for the unexpected will be far shorter. It would serve both the Department and the public well if the successful lessons learned from Y2K can be turned into a roadmap for the way the DOT does business in the future.

The gathering of "lessons learned" began even before the successful January 1, 2000 rollover. DOT staff had begun to draft an outline and questions for participants to answer prior to the rollover. Some of the modes spoke about lessons learned at a January 11 Transportation Research Board session, "Y2K: Insights and Lessons Learned." The speakers represented the U.S. Coast Guard, the Federal Railroad Administration, the Federal Transit Administration, the Federal Highway Administration, and the Federal Aviation Administration. At the final Y2K Transportation Sector Working Group meeting on January 27, 2000, the participants, including representatives from a range of transportation associations, thought that the focus by senior management at DOT, on all aspects of Y2K, was the critical reason for its success.

The Federal Government Role: Executive Order #13073

Executive Order #13073 signed by President Clinton states that: "The American people expect reliable service from their Government and deserve the confidence that critical government functions dependent on electronic systems will be performed accurately and in a timely manner. …Minimizing the Y2K [Year 2000] problem will require a major technological and managerial effort, and it is critical that the United States Government does its part in addressing this challenge."

The order established executive branch policy that the agencies shall: (1) assure that no critical Federal program experiences disruption because of the Y2K problem; (2) assist and cooperate with State, local, and tribal governments to address the Y2K problem where those governments depend on Federal information or information technology, or the Federal Government is dependent on those governments to perform critical missions; (3) cooperate with the private sector operators of critical national and local systems, including... the transportation system, and the electrical power generation system, in addressing the Y2K problem; and, (4) communicate with their foreign counterparts to raise awareness of and generate cooperative international arrangements to address the Y2K problem.

The President's Council on Year 2000 Conversion, established on February 4, 1998, by Executive Order 13073, was responsible for coordinating the Federal Government efforts to address the Year 2000 problem.

This report summarizes the lessons learned by the individual operating administrations, and DOT as a whole, as a result of preparation for the January 1, 2000 rollover, or Y2K. The two purposes of this report are to: (a) synthesize the lessons learned as provided in the reports written by the individual operating administrations, and (b) based on the synthesis, provide recommendations incorporating these lessons into the DOT future activities and way of doing business.

Comments provided throughout this report are based on either reports provided by the operating administrations and other groups, or on observations of their activities and participation. Two types/levels of recommendations are given. The overall recommendations, which are not specific to any particular stage of the effort, are given at the end of the report. The recommendations specific to the particular stage are provided at the end of the relevant section.

This report, primarily for ease of explanation, summarizes the DOT Y2K effort in three distinct phases: Remediation, Outreach, and Activation (See Time Line, Figure 1). It should be noted that this division diminishes somewhat the importance of what was gained because of cross-phase teamwork and the subsequent cross-reliance that strengthened the effort as a whole. As Table 1 shows, most, but not all, operating administrations participated in all three stages. Note: The organizations listed under the "Group" were active participants in the Department effort, working as either a multi-agency or cross-functional team or as a component of a modal administration. The full reports are appendices to this report. Some of the information in this report is based on comments made at the January 11, 2000 Transportation Research Board session "Y2K: Insights and Lessons

learned," and during the January 27, 2000 Transportation Sector meeting.

The activities of both OST Office of the Chief Information Officer and the Office of the Inspector General (OIG) during Y2K showed their great adaptability to meet new challenges. [No summary of the public affairs effort undertaken jointly by OST and the modes was provided.] The OIG comments are not summarized by the three stages, but are presented here, from their perspective, addressing four areas:

Teamwork
A key component in the Year 2000 partnership was the sense of team that was displayed by all parties. Both the Operating Administrations (OAs) and the OIG were working toward a common goal of ensuring that systems were assessed, repaired, validated, and implemented before the Year 2000. Often we worked as teams out in the field in Coast Guard and FAA to validate jointly that the OIG and the FAA/Coast Guard were satisfied as to the progress of the work. We were told by our management to consider that a failure in FAA was a failure in OIG, as a further incentive to work together to get the job done.

Trust
In order to be an effective partner with the OAs, trust needed to be established between the operating elements in the department and the OIG. This was not easily established initially and there was a significant amount of resistance to our involvement with the project. However, over time and with a value-added service, we convinced management that we were in fact here to help.

Value Added
Trust cannot be established without bringing something to the table. At each phase of the project, our team worked with OA teams to provide management with tangible and useful recommendations and information that could have been potentially embarrassing to the department if not corrected. When management realized we could provide this service, working relationships improved dramatically.

Independence
Even with the Team concept, the OAs and OIG recognized the need for us to remain independent. At times we needed to agree to disagree with OAs in a constructive manner. This was especially critical at hearings where Congress wanted our independent opinion on the status of the project.

Time Line/Key Events:

1995/7: Y2K treated as a technical repair
Remediation begins

1998: Y2K treated as a concern of senior management
1998: Summit/Outreach Begins (OAT established); Remediation continues
1999: Remediation ends; Outreach continues; Activation begins
2000: Y2K Rollover

1995/6	1998	1999	2000
Remediation begins	Summit/Outreach Begins; (OAT established) Remediation continues	Remediation ends; Outreach continues; Activation begins	

Time Line (Figure 1)

A distinct division can be made between the first phase or remediation and the last two phases or outreach and activation. Remediation, for the most part, was handled by the information technology offices in the operating administrations, without much, if any, input from other offices or outside partners. Once senior management became involved, the Y2K effort became much broader in scope.

U.S. Department of Transportation: Three Stages of Y2K (Table 1)

Operating Administrations	Remediation	Outreach	Activation
- Coast Guard	X	X	X
- FAA	X	X	X
- BTS	X		
- FHWA	X	X	X
- FMCSA	(With FHWA)	(With FHWA)	X
- FRA	X	X	X
- FTA	X	X	X
- MARAD	X	X	X
- NHTSA	X	X	X
- RSPA	X	X	X
- St. Lawrence Seaway	X		
TASC	X	X	X
Groups			
OST	X	X	X
- CIO	X	X	X
- OAT (all modes)		X	X
- S-60	X	X	X
Inspector General	X	X	X
General Counsels (all modes)	X	X	X
Public Affairs (all modes)	X	X	X
CMC/OET		X	X
Transportation Sector Working Group		X	X

Three words - one for each stage of the effort - are used to capture what is the necessary outcome for the stage to be considered a success. For remediation, communication was chosen. Coordination was elected for outreach. Cooperation was picked to describe activation.

Communication was chosen for remediation because the result of a successful remediation effort is the ability of information technology systems to communicate with each other. When these systems can communicate, accurate information flows occur and transportation systems will work.

Coordination was selected to describe the outreach effort because the result of a well-coordinated effort is one that involves the efforts of many partners. As a OneDOT effort, each mode strength was emphasized. For example, the FAA and the Coast Guard took the lead in international concerns and the ITS office (the Office of Traffic Management and ITS Applications) of FHWA took the lead in organizing the 1998 Summit. In the instance of Y2K, the partners were the many DOT agencies working together and the 129 or so associations representing the broad range of transportation groups. The U.S. DOT effort strengthened existing partnerships and revitalized dormant ones.

Cooperation was chosen to describe activation. During an emergency and the subsequent response, cooperation is essential. Emergencies require staff and agencies to be tested beyond their standard day-to-day efforts. The preparation prior and during the Y2K rollover showed cooperation at its best.

Remediation = Communication

In his December 14, 1999, speech before the National Press Club, Mr. Koskinen explained why the importance of remediation was not understood. "Another obstacle has been the widely held perception, initially at least, that Y2K is an information processing problem. Organizational leaders who had grown accustomed to leaving information technology - or IT - matters in the hands of their IT people continued to do so when it came to Y2K. As a result, in many organizations Y2K was just another problem battling for scarce resources. Many senior executives had no concept of the magnitude of the risks they faced."

The remediation phase did not get the early start it needed, as was noted by almost every operating administration, in large part because it was treated as a technical fix. What Y2K taught the Department is that information systems are a major part of its core businesses and needs the full attention of senior management. The Department is not alone as it works to bring information technology into its highest decision making circles. The importance of information technology to the new economy has been a theme in recent analyses and articles. For example, the U.S. Department of Commerce June 1999 report, "The Emerging Digital Economy II," reports several major information technology trends.[1]

The reports provided by the operating administrations indicate that this level of remediation is not expected again any time soon. While from that perspective, little may be gained by synthesizing the lessons learned, the valuable lessons that were learned deserve to be noted for reasons beyond

another major remediation undertaking. As the remediation effort unfolded, often the staff within these agencies found a wide variety of systems throughout the various offices that had been purchased from different vendors over the years. At the time remediation began, some of those vendors were no longer in business or the original designers and implementers of some of the systems were no longer available for any number of reasons. In addition, no one administration could point to one person or one office that knew of all the IT systems being used or who kept a centralized list of vendors. Instead, through the years, individual offices had been allowed to purchase specific software to solve a specific need without worrying about its compatibility with other internal systems. Not one administration had an updated inventory of their internal information systems. In a city where information is often the most powerful bargaining chip available, no one administration favored "centralized ownership" of their information. In part, this was due to the lack of understanding of the important and ever growing connection that exists between information, information technology and core business functions.

The FAA and Coast Guard were the two operating administrations with the greatest need for remediation. Between these two agencies, their systems make up the majority of the Department mission critical systems. Of the Department 609 mission-critical systems, the FAA had 474 and the Coast Guard had 74. Consequently, the remediation activities of these two agencies were the most closely followed by Congress, GAO, the media, the critics, and the general public. The one significant difference between how the FAA and Coast Guard and the other operating administrations handled remediation was with regard to outreach. The FAA and Coast Guard sought not only to remediate their own systems, they initiated partnerships with outside entities to urge remediation of systems and development of effective contingency plans. These two organizations, in many ways, set the standard for remediation of both internal systems and for the systems of their partners.

Many of the other operating administrations, as noted by both their actions during the remediation stage and in the reports they submitted, saw this phase as one devoted solely to correcting internal systems. They saw little or no need to work, or even communicate, with partners about the effort. TASC, whose primary responsibilities are to handle the internal workings of the department, provided the best explanation of the strategies they used during this phase. The lessons learned by TASC, such as the need to verify vendor claims, would serve all future IT efforts well.

The OST Office of Intelligence and Security (S-60) report focused on the need to resolve those remediation issues that fall under the larger heading of National Security. S-60's report looked at what the Department needs to accomplish to meet the organizational, procedural and technical requirements that will result in the effective support of the national security, counter-terrorism and antiterrorism, emergency response, critical infrastructure protection, threat dissemination and information sharing needs of the Secretary, and the intermodal needs of the DOT Operating Administrations.

OST Office of the Chief Information Officer provided the following six important observations, based on their oversight and involvement in all three stages:

1. When the department began its effort four years ago, the focus was on information technology repairs with little attention paid to the pervasiveness of information technology throughout the department. As a result of the Y2K effort, it became apparent that information technologies are vital to the conduct of core businesses functions. The responsibilities and management of information technology in the future must be expanded to take this shift into account.

2. At the time the remediation effort got underway, an inventory of the department's information technology was unknown. As a result of Y2K, an inventory exists and the department's IT infrastructure has been upgraded.

3. With the importance of information technology now better understood, it is important for the department to build on these Y2K experiences with sustained investment in information technology.

4. The Y2K effort strengthened those channels of communication that already existed, and in some instances opened new channels. These channels must be continued.

5. For project management to succeed, two critical elements are necessary: good planning; and the serious, focused attention of senior management.

6. Serious thought must be given to how best to institutionalize what the department accomplished during the past four years.

Recommendations to Achieve Good Communications

Responsible Office: OST CIO to take the lead in instituting these recommendations.

1. Establish a Chief Information Officers (CIO) Working Group. Each operating agency is to establish a CIO office and appoint a Chief Information Officer who reports directly to the modal [deputy] administrator. The CIO or the CIO's designee shall be a member of the DOT CIO Working Group. The working group should meet regularly (e.g., bimonthly). As one of the first outcomes, the working group should set the minimum acceptable level of the Department's IT inventory and ensure that the inventory is kept current.
2. One of the Department's statutory responsibilities and a key component of its Strategic Goal is to advance the nation's vital security interests in support of national strategies by ensuring the security (See S-60's report) and availability of the nation's transportation system. To achieve this, the CIO will be responsible for hardening all Department of Transportation's (including those of the various operating administrations) information technology systems to ensure

security. All DOT systems should meet minimum standards (to be determined) to limit external intrusions.

3. Continue to coordinate the software compatibility of all agencies and the Department. During the outreach stage, there was a great dependence on information technology including e-mail, the Internet, list servers and voice mail, to allow real-time responses (versus the days to weeks long process needed to get a letter written, reviewed, signed, out, and answered). However, even the use of technology was problematic in that, on occasion, E-mails requesting information were not received until after the due date. The CIO's office must encourage all agencies to have compatible e-mail and software to speed the transference of mail and to enable the reading of all attachments without delay.

4. Consistent definition and selection of mission critical systems. Some of the operating administrations noted that the systems they designated as "mission critical" might not have been properly categorized. In part, this was the result of a lack of consistent guidance and coordination among the modes. Some operating administrations noted that in the future they will give much more thought to the application of the "mission critical" label to a system, with the likely result being far fewer systems categorized as such. The definition of "mission critical" will continue to be relevant as the Department focuses on capital planning, as well as critical infrastructure and national security concerns.

Outreach = Coordination

No one phase was more important than another nor was one any less demanding than the other. What distinguished the outreach phase from the other phases is that the outreach staffs were not outreach "specialists," while those involved in remediation and in emergency preparedness/ activation were tapped because of their expertise. The Department's outreach effort was truly one where we learned as we did.

The Department's Outreach effort was, for the most part, a coordinated one. Only during the first six months during 1998 as the larger Federal Y2K effort was taking shape did individual operating administrations undertake outreach on their own. Once the Executive Order was signed, President Clinton appointed John Koskinen to serve as Chair, President's Council on Year 2000 Conversion. With the President's Council in place, the federal outreach program began to take shape. U.S. DOT Deputy Secretary Downey was named to chair the Transportation Sector Working Group. As soon as possible, Mr. Downey sought to move the department's partners to action. In his May 1998 speech before members of ITS America, he stated that within 90 days, the DOT would host a Y2K summit.

The preparation and execution of the summit deserves a specific note. At the very time that OneDOT as a way of doing business was getting underway, the summit may have been one of the first true OneDOT successes. On July 27, 1998, working together as OneDOT, seven operating administrations (led by the Federal Highway Administration) and the Office of the Secretary brought

together more than 175 representatives from the surface transportation industry to devise solutions to fix potential computer problems that could affect synchronized traffic lights, freeway ramp meters, automated transit management programs, cargo tracking systems and other high-tech transportation systems. The DOT staff met weekly for the two months before the summit to plan and organize the summit.

The one-day "Awareness to Action" summit served as the kick-off for a 500-day Y2K education effort. Attendees which included industry professionals and federal, state and local government representatives, helped to draft "Steps for Action," a brochure operators could use to help guide them as they worked to prevent computer-related surface transportation problems anticipated when the year 2000 begins. To assist the participants in drafting the brochure, all were given a copy of a study guide designed to provide a basis for discussion in the breakout sessions, and as a framework for defining the "steps for action." The daylong summit was videotaped. Copies of the edited video were provided as an additional way to explain the critical need for action.

Following the July 1998 summit, DOT staff realized Y2K outreach needed to continue for the remainder of 1998 and throughout 1999, but that the structure developed to organize the summit was inadequate. To build on the success of the summit, the Department's Outreach Action Team or "OAT" was established. The OAT was chaired by the Deputy Secretary and included representatives from all operating administrations and OST. The OAT was formed to coordinate DOT management and implementation of Y2K planning and remediation and to assist senior level decision-makers on Y2K management issues. After the point where it became apparent that DOT mission critical systems would be Y2K ready, the Department became intensely focused on facilitating the Y2K readiness of the transportation industry and ensuring that the nation transportation infrastructure would not be impacted by Y2K problems. The OAT was critical to the overwhelming success of DOT outreach efforts. The OAT met and communicated regularly by email to keep abreast of Y2K issues and concerns, communicate DOT policy and important decisions, and respond to external requests for transportation Y2K information.

The OAT also included four subgroups: the Coordination Subgroup that focused on outreach to industry partners; the Compliance, Enforcement and Liability Subgroup that focused on legal and regulatory issues; the Communications Subgroup that was designed to establish an overall public affairs strategy; and the Activation Subgroup that focused on emergency response coordination during the Y2K rollover.

The Outreach Action Team was aptly named. The effort was one of constant action. In the course of a week, team members could be asked to respond to a number of requests such as: preparing testimony for upcoming Congressional hearings; preparing briefing points for both the Secretary and Deputy Secretary for their meetings overseas; speaking on behalf of the Department at various meetings; or attending public awareness fairs. These responsibilities were in addition to each OAT member's modal Y2K and other responsibilities.

The OAT fit the OneDOT model as defined and described in the OneDOT brochure, "Working Better Together."[2]

The OAT was:

- cohesive and integrated;
- a change both in the culture within DOT and how we conduct business;
- established an environment that encouraged collaboration across modes;
- an effort which rewarded efficiency and creativity;
- a team which instilled in each employee that they represent their operating administration,
- the Department and the national transportation system;
- successful because of the active participation from both managers and employees; and,
- a creative undertaking.

Each operating administration that was an active member of the OAT ensured that outreach efforts weren't duplicated, and that concerns of stakeholders were fully addressed. As RSPA noted in their report, the strategy of active participation on the DOT Outreach Action Team worked best as a forum for sharing lessons learned and for meeting the increasing demands for public information. Tools and lessons learned, developed throughout government and industry cooperation, were shared in an unprecedented manner. The OAT teaming effort worked closely and quickly to solve Y2K issues and proved to be an effective way to reduce duplication of efforts. Each operating administration designed its outreach to meet the needs of its specific partners. For example, FAA, FRA and FTA each hosted several roundtable meetings with their partners. FHWA held several workshops to help local and state traffic engineers and contractors through its regional offices or divisions. Teamwork, a OneDOT approach in coordination of information, discussion and responsive electronic communications was the common thread to the team's success.

One good example of strong OneDOT teamwork resulted in the "Travel Tips for the Year 2000 from the U.S. Department of Transportation." The team effort began with a partnership with AAA when they agreed to provide the tips to their travel clubs for them to print if the Department met their short publication deadline of about sixty days. The tip sheet included tips from most of the U.S. DOT operating administrations. The tips were also available electronically. Secretary Slater announced the travel tips in a radio interview on September 22, 1999, one hundred days before the Year 2000 Rollover.

Both the Coast Guard and the FAA used Y2K to expand their leadership role in the international arena. With approximately 96% of cargo entering or leaving U.S. ports in foreign flagged vessels, it was not enough for the Coast Guard to address only U.S. vessel and facility Y2K issues. Interruptions in foreign ports or problems with foreign flagged vessels could have had a significant impact on U.S. marine transportation. With the safety of ships and U.S. ports as their top concern, it became very clear to the Coast Guard that the scope of Y2K efforts had to be expanded to the international arena and that additional outreach was necessary.

The Coast Guard recognized that limited Y2K activity in many countries was due to a lack of leadership and focus on the problem. Therefore, they purposefully stepped forward to take on a leadership role and to develop a coordinated international effort. A variety of strategies were used, including acting as the International Maritime Organization's (IMO) agent/facilitator to bring together government and industry representatives from around the world to: agree on a set of best practices for addressing marine Y2K concerns; brief the United Nations on Y2K to raise awareness at the highest levels of international government; invite representatives from foreign governments and industry to observe and participate in U.S. port Y2K readiness exercises; and encourage the G-8 nations and others to conduct their own contingency planning and exercises. The Coast Guard even developed a "Playbook" on how to conduct a port Y2K readiness exercise and offered it internationally to the G-8 and IMO member nations. These efforts directly led to a coordinated international approach to marine Y2K preparations.

The international efforts of the FAA, like those of the Coast Guard, filled a vacuum. The FAA acknowledged that they had no authority to compel either international organizations or countries to take direct and specific action. The focus of the FAA global leadership role was to influence international entities into taking action in the interest of the FAA and the civil aviation community. The FAA chose to establish informal teaming arrangements with partners that possessed authority (e.g., International Civil Aviation Organization and International Air Transport Association, etc.) to leverage resources and coordinate activities aimed at raising the awareness of the negative impact of inaction. Building on these efforts, the FAA should continue to assume a leadership role in the international civil aviation community.

On the domestic front, one of the FAA's most successful outreach efforts (as noted by both FAA and their industry partners) was to hold regularly scheduled meetings with an Industry Steering Committee every other week. Although initial meetings focused on administrative and logistical details, the group was able to focus on substantive issues at all subsequent meetings.

Both the FAA and Coast Guard established offices focused solely on Y2K. To keep up with theY2K requirements, in August 1998, the Coast Guard established a Y2K staff of seven people, later expanded to 14, to coordinate all Y2K responsibilities. Having a dedicated cadre as a focal point greatly improved the level and consistency of the Coast Guard's Y2K efforts. The FAA central program office reported directly to the Administrator. Those selected for the program office were staff with appropriate skill sets. The FAA found that the Centralized Program Office provided direction with one voice inside/outside the agency. The office established clearly defined roles and responsibilities for those involved and held individuals accountable for success in meeting milestones. The creation of the office enabled the FFA to factor Y2K program responsibilities into employees' performance plans. Based on what they now know, the FAA would have started the central program office much earlier. The FAA views the central program office enough of a success to suggest that specific, task oriented offices be established in the future to address other issues confronting the FAA/DOT.

For the other operating administrations, overcoming wariness by industry at the beginning of the outreach effort may have been the most difficult part of the outreach effort. Each chose the approach that best fit their need. MARAD chose to work directly with leading industry companies rather than industry trade associations. FRA expanded its partnerships from ones historically based in the operating department of the railroads, to new ones with information technology sector and business planning sector representatives. FHWA broadened its network to go beyond its traditional partners, the State DOTs, to include county and local governments.

The sense from the various operating administrations is that the hard work paid off and they intend to maintain these alliances. As FRA noted, nurturing the relationships with the non-traditional sectors of the industry through periodic contact will give FRA's employees a more comprehensive understanding of the challenges our partners face. In addition, these non-traditional sectors will be included in future FRA Safety Assurance and Compliance Program efforts.

The OAT formed several subcommittees to address particular concerns in depth and to draw upon specific expertise. The Compliance, Enforcement, and Liability Subcommittee (CEL) was chaired by the General Counsel's Office and formed to address any legal issues related to Y2K planning, remediation, enforcement and process implementation. The CEL subcommittee consisted of representatives from each of the Chief Counsels' offices of the nine operating administrations within DOT. Additionally, enforcement program representatives were often actively involved in CEL discussions and the Office of Inspector General Counsel as well as TASC representatives participated in several CEL meetings. CEL meetings were generally held monthly and issues were often addressed by email through a listserve account. CEL representatives and other attorneys with particular expertise were also consulted by the OGC on an ad hoc basis as needed.

The Office of General Counsel active involvement began prior to the 1998 summit. The Office of General Counsel was an active participant in the OAT from the beginning. In the fall of 1998, the OGC became a full participating member of the Deputy Secretary Y2K Outreach Action Team (OAT). The Compliance, Enforcement, and Liability Subcommittee (CEL), one of the four OAT subcommittees, was chaired by the General Counsel Office. The CEL early and regular involvement allowed prompt responses to questions.

As good a job as the Department did in communicating with its partners and the public, it could have been more aggressive in communicating with DOT employees. On a Department wide basis, the "Y2K and You" brochure was posted on the intranet, but the Coast Guard was unique among the operating administrations in focusing on the personal preparedness of its employees. The Coast Guard was concerned about the effectiveness of its personnel in responding to Y2K situations if they were worried about the Y2K impacts on their families. To lessen any anxiety, the Coast Guard developed and distributed a personal preparedness brochure to every active duty, reserve, and civilian employee of the Coast Guard. The brochure included a checklist of items for each family to consider in making their preparations for Y2K. The brochure was followed up with a video

distributed to every unit that reviewed what steps the Coast Guard had taken to prepare for Y2K and calmly stressed measures members and their families should take at home. Because of these efforts the Coast Guard was confident that its personnel would show up ready for work assured that their families were prepared for Y2K.

Recommendations to Achieve Good Coordination

Responsible Office: Office of the Deputy Secretary to take the lead in instituting these recommendations.

1. OST to serve as the coordinator/home for future DOT-wide outreach efforts. [For those efforts that are less than department-wide, but involve three or more organizations, one operating administration should take the lead and coordinate the effort with OST, as appropriate.] Future DOT-wide outreach efforts will obviously be ones of national scope such as safety, national security, or critical infrastructure protection. To ensure the type of senior management oversight that Y2K received, the outreach effort will be best served if housed in the office of the senior manager responsible for the project.

2. Continue the recharged partnerships. Keeping our industry and international partners and constituents involved in these efforts should be considered critical given the interdependencies of global commerce.

3. Provide DOT employees with information on major DOT initiatives on a regular basis. As transportation professionals, they can serve as the department's emissaries with both their business and personal contacts. As users of the transportation system, employees deserve to be as knowledgeable as the general public to enable them to make decisions based on the best information. In addition, by explaining how major DOT initiatives are tied to the DOT strategic plan, employees will better understand where their responsibilities fit.

4. Working with S-60 and the OET, develop an effective process to collect, analyze, disseminate and share information on threats to, and vulnerability of, the transportation infrastructure, protected from unwarranted public disclosure.

5. To support the Department's information needs, S-60 recommends an assessment which addresses information sharing and threat dissemination and warnings with state and local governments in the transportation sector, and the transportation industry. This project must assess the present and future national security-related communications requirements of the Department, identify shortfalls, and recommend process, organizational, and technological improvements as appropriate, focused especially on those needed to meet PDD-62, 63 and 67 mandates.

   Information sharing and threat dissemination and warning processes must be looked at between:

- Secretarial staff offices and Operating Administrations
- DOT and the transportation industry
- DOT and the Intelligence and Law Enforcement community
- DOT and the rest of the federal government
- Operating Administrations and their regional offices
- DOT Command Centers and other Command Centers
- DOT and state/local transportation sector elements.

Activation = Cooperation

The name chosen for the final stage of the effort signifies a major shift in the role of the federal government from the reactive role in response to natural disasters to a more proactive role in anticipation of Y2K. From the time the Office of Emergency Transportation (OET) began to plan for Y2K, the DOT's approach was to prepare for the ability to anticipate future problems, needs or changes (by following the sun) and to serve as information gatherer and disseminator to its partners. OET understood the department would need many more people than normal to staff the Crisis Management Center (CMC), and that for the first time, these people would be required to synthesize information and convey it to senior management, and field offices in earlier time zones.

The Activation Information Management (AIM) database was one of the key reasons the DOT was able to establish consistent, department-wide response. The use of a common database was a profound shift in how the Department acquired and distributed information. The use of this database lays the groundwork for the future use of DOT-wide databases. The demand by senior decision makers, our partners, the public, and the media for real-time information will only continue. For the Department to be able to meet this information demand, AIM should become an integral part of the Department communications strategy.

One pre-rollover effort deserves special mention. Each operating administration prepared an information flow chart. These charts, called "wiring diagrams," forced each operating administration to understand how information had flowed in the past, and how the information would flow during the Y2K rollover. They were an effective way to convey to senior management the critical importance of information flows - both human and IT. These "wiring diagrams" should be incorporated into other Departmental activities.

Should the Department give serious consideration to a 24/7 command center at headquarters, it would benefit from reviewing what was done to prepare this building for January 1, 2000. TASC deserves special recognition for outfitting the building with the systems it needed in time for the weekend. The predominant problem that surfaced during the activation was the small size of the room and the lack of fresh air.

RSPA's Office of Emergency Transportation was charged with the responsibility to organize a DOT-wide program for the activation phase. As the coordinator, RSPA served as the DOT's link to the Department of State, the Defense Department and the President Council Information Coordination Center (ICC). With the ICC not even partially operational until September, it was difficult for DOT to develop an internal plan that meshed with the needs of the ICC. All operating administrations agreed to staff the Crisis Management Center, while the FAA and Coast Guard also staffed their respective command centers. The operating administrations gathered information from the field but in the way that best matched their need.

Recommendations to Achieve Good Cooperation

Responsible Office: RSPA's Office of Emergency Transportation will take the lead in instituting these recommendations.

10 During future disasters and emergencies, the Department's senior management will need to have information delivered in as accurate and timely a manner as possible. To ensure that all appropriate modes and offices participate as needed, the CMC should be expanded and equipped with the latest technology to facilitate cross-modal discussions.

20 In preparation for the millennium rollover, OET developed the Activation Information Management (AIM) database system. AIM is a web-based reporting system that allows a nationwide status update of incidents around the country as they occur. OET, based on what was learned, should refine and expand AIM to allow it to provide a more effective nationwide status of the transportation system. Prior to refining and expanding the database, OET may wish to bring together some of the users to discuss and agree upon: what constitutes Elements of Essential Information (EEIs) (when appropriate, to be consistent with the mission critical systems); the definition of Red, Yellow, and Green; and, the status of the system. One expansion of AIM currently underway is between the Federal Motor Carrier Safety Administration (FMCSA) and OET. They are currently working on establishing an FMCSA page within the AIM software to allow reporting separate from the FHWA system. This will allow FMCSA field staff to report EEI's directly into the AIM database, enabling a more efficient and uniform flow of information to the CMC.

30 As part of AIM, OET purchased site licenses to operate the database. This system was licensed for use in all operating administrations, regional offices, and the ICC. As OET institutionalizes this system for use in emergency reporting, the licensing structure might need to be changed.

40 AIM has the potential for use beyond reporting disasters and emergencies. The key determination that needs to be made is if the Department is to shift to reporting the status of the transportation system on a regular basis. If the department chooses to expand the role of AIM, then AIM training will need to be extended beyond the emergency coordinators' community.

50 The Business Continuity and Contingency Plans for Y2K were concerned with a particular event (1 Jan 2000), and were, by definition, short-term. The Department must now turn its attention to developing and implementing a Continuity of Operations (COOP) Plan. COOPs, deal with unexpected events (e.g., tornados, bombings, earthquakes) and are, by definition, long-term. COOPs are more likely to be called into play when the safety of a Government office (or building) is jeopardized. COOPs need to be written to deal with tenants of a building and their specific needs, rather than modal specific needs. The Department requires the individual operating administrations to prepare modal COOPs, which should contain building specific plans. The modal COOPs should be coordinated to ensure consistency and to avoid "stove piping." To ensure the COOP will work, the Department should hold periodic, multiple agency exercises as part of an evaluation/test. The COOP should in the future take on more of a "OneDOT" perspective. (Either OST or each agency) will notify the field offices to require COOPs. Should field offices be co-located with other federal agencies, the DOT agencies should stress to their fellow tenants that the COOP is building and not agency specific

6. In the future, a written list of DOT staff by name, social security number and clearance level will be updated every three months. The written list will be provided to the OET.

7. Working with S-60 and the OST CIO's office, the OET will establish a plan for timely reporting of threat information to the senior staff of the Department, as well as future analysis and dissemination to the operating administrations, state and local governments, and the transportation industry.

8. OET should build on the Day One staffing and reporting plans that were established for Y2K. Good Day One planning allows for close coordination with the existing reporting infrastructure to ensure proper information flow and cooperation of all involved. In addition to continued use of AIM, OET may wish to develop and use a small Intranet-based database to allow flexible, easy reporting and monitoring from multiple locations. Similarly, the CMC now has SIPRNET, a secure Internet for classified information that they should continue to use. Finally, whenever possible, train, exercise, dry run, and rehearse.

9. Response Teams. OET working with the Department's OGC should incorporate the Defense Production Act in December of 1999 into the Department's future response program.

General Recommendations

Training

As the new economy becomes more entrenched, information technology will be an integral part of senior management decision-making. Future DOT staff must be better equipped with information technology skills as well as the ability to assess and synthesize the vast amounts of information gathered. As information flow between partners grows, these skills will become more critical.

As training continues throughout the career, the best way to "imitate" these information flows is through the constant use of cross-functional teams. The multi-functional teams of information technology specialists, program specialists and emergency coordinators offer an excellent example of building on and adding to strengths.

Personnel

Several administrations noted very specific personnel concerns that they faced during Y2K. These personnel issues should be addressed or else future DOT-wide efforts, particularly those that will require technology expertise or major outreach coordination, will result in straining existing resources.

Unions were of concern to both FAA and FRA. FRA found that their Y2K activities resulted in cooperation and a success story with the union representing FRA's employees, American Federation of Government Employees Local 2814. FRA quickly arrived at an understanding with the union as to staffing requirements for the Y2K weekend. FAA found that union representation on the Air Traffic Services Y2K team was a success, although union involvement earlier in the process would be essential in the future.

The Coast Guard sought alternative options to supplement their limited personnel. Y2K occurred at a time when the Coast guard was already experiencing personnel shortfalls in its active duty ranks, so the Coast Guard made extensive use of its Reserve forces to meet the Y2K challenge. They chose to recall Reservists to active duty to assist in remediation, outreach and activation. Also, since the Coast Guard did not have enough technical personnel to handle all the remediation efforts in the limited time frame available, extensive use of contracted technical services was employed to quickly address critical systems repair and testing. In addition, Coast Guard Auxiliarists volunteered time to assist in outreach and activation efforts. The availability and capability of these alternative personnel resources were a major factor in the Coast guard being able to successfully meet the Y2K challenge.

The Coast Guard does rely on its core of reserve officers and enlisted personnel for routine operational support and surge response, and Y2K was no different. Bringing reservists onboard for surge needs such as Y2K or any other contingency is a given. However, as the need for reservists becomes more common, the Coast Guard raised the very serious concern regarding the negative consequences that such voluntary and involuntary call ups produce. These include a drain on the reservist's civilian career and employer, and diversion of reservists away from a productive career path to support other service needs.

The use of many contractors during each stage of the effort is worth noting. One question that may need to be resolved is how will contractors be used in the future should the issue involve either national security or critical infrastructure.

Finally, except for the FAA and the Coast Guard, it appears staff at most of the administrations had Y2K responsibilities added to their existing workload. If the Department and the administrations are

to embrace OneDOT teams as a way of doing business in the future, current staffing patterns may need to be reconsidered. It may be too much to ask staff to take on what can easily become a second full time position for six to nine months or more. To keep up a crosscutting effort, incentive awards for crosscutting efforts should be given a high priority.

Public Affairs Strategy

The Department should create a comprehensive and common public affairs strategy early in the project in order to control communication, manage expectations, and keep the public informed.

One of the few criticisms raised by an association official was the Department's inability or unwillingness to get out in front to tout its successes. The example given was that for most of 1999, the probabilities of aviation failure on January 1, 2000 were touted by Congress, the General Accounting Office (GAO), major news magazines, and Y2K experts. During 1999, the Federal Aviation Administration (FAA) worked to correct problems, upgrade systems and work with its partners. At the same time, both the FAA and the U.S. DOT sought to assure the public. However, these reassurances were often drowned out amid louder voices. The nay sayers were able to command the attention of the media without facts at the very time when the owners and operators of the nation's transportation systems were working to ensure a smooth transition to the year 2000. As a result, the U.S. DOT's partners felt that, for all of the Department's hard work to ensure readiness, the transportation industry was seen to be less credible than the critics, and that the public was not as well served as it should have been. To counter loud voices in the future, it is recommended that the Department create a comprehensive and common public affairs strategy early in the project in order to control communication, manage expectations, and keep the public informed. A supporting recommendation is to ensure, in future efforts, that regional offices are more active participants earlier in the effort.

A final recommendation is to treat all future work as "Y2K." The establishment of cross function teams or open lines of communications with industry need not wait until an emergency arises. Instead, these efforts should be incorporated into DOT's way of doing business. As IT networks become more established and a stronger component of daily work lives, the way we did business by mode or via stove pipes becomes less and less appropriate.

Conclusions

The need for more time was cited by almost all of the administrations. If not more time in months, then more staff available full time during the period the effort was underway.

The easy conclusion to draw from Y2K would be to request more resources both in staff and funds. However, the likelihood is that there will be no more of either. What Y2K taught the DOT is that it is possible to do the job well with available staff. For staff from some of the operating administrations, it meant a redirection of duties, but for most of the staff involved it meant taking on Y2K responsibilities in addition to current responsibilities. The downside is that during this period the other duties likely suffered at the hands of the higher Y2K priorities.

The FRA report noted at the end that "The overall Y2K effort at the Department was probably the largest and longest OneDOT activity ever undertaken, and it was successful. The success came in part from the fact that the Secretary and Deputy Secretary regularly showed their interest in the matter (and they, in turn, were conveying the interest of the President and Vice President) and that personable and energetic people were chosen to lead the Department's activity." Furthermore, the staff members who participated in it found it to be a challenging, interesting, and enjoyable endeavor, and they also found it to be a valuable learning experience as they spent time with people from all other modal administrations and secretarial offices. This should encourage the Department to establish more OneDOT activities on matters that touch all the transportation modes.

From FRA, a final note of caution: Because a sizeable but still limited number of people were involved in the Y2K efforts, it is imperative that a comprehensive Y2K after-action report gets wide dissemination to all management personnel within the Department.

Endnotes

[1]The Emerging Digital Economy II, June 1999, U.S. Department of Commerce, Executive Summary

IT-producing industries (i.e., producers of computer and communications hardware, software, and services) that enable e-commerce play a strategic role in the growth process. Between 1995 and 1998, these IT-producers, while accounting for only about 8 percent of U.S. GDP, contributed on average 35 percent of the nation's real economic growth.

In 1996 and 1997 (the last years for which detailed data are available), falling prices in IT-producing industries brought down overall inflation by an average 0.7 percentage points, contributing to the remarkable ability of the U.S. economy to control inflation and keep interest rates low in a period of historically low unemployment.

[2]OneDOT, "Working Better Together" brochure, Page two.

"In recent years, we have realized integrating our efforts is imperative if we are to continue leading the change and growth in those systems. Instead of planning and operating a range of separate, distinct modes, we must now think of the nation's transportation needs as a cohesive and integrated system. This integrated approach is the foundation for the OneDOT Management Strategy, a change both in the culture within DOT and how we conduct business. The management strategy creates an environment that encourages collaboration across modes and agencies at all levels; rewards efficiency and creativity; and instills in each employee that they represent their operating administration, as well as the Department and the national transportation system. OneDOT will only succeed with active participation from both managers and employees. We must think creatively. We must seek opportunities to partner and collaborate with colleagues in other modes to actively resolve issues and work together to serve the Department's clients."